Fisheries and Oceans Canada | Pêches et Océans Canada
Science | Sciences

CSAS | **SCCS**

Canadian Science Advisory Secretariat | **Secrétariat canadien de consultation scientifique**

Proceedings Series 2007/022 | **Compte rendu 2007/022**

Proceedings of the Maritime Provinces Regional Advisory Process on Scallop Fishing Area (SFA) 29 Assessment

12 April 2007
Bedford Institute of Oceanography
Dartmouth, Nova Scotia

Ross Claytor
Meeting Chair

Bedford Institute of Oceanography
1 Challenger Drive, P.O. Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

August 2007

Compte rendu du Processus consultatif régional des Maritimes sur l'évaluation des stocks de la zone de pêche du pétoncle (ZPP) 29

Le 12 avril 2007
Institut océanographique de Bedford
Dartmouth (Nouvelle-Écosse)

Ross Claytor
Président de réunion

Institut océanographique de Bedford
1, promenade Challenger, C.P. 1006
Dartmouth (Nouvelle-Écosse)
B2Y 4A2

août 2007

Canada

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings include research recommendations, uncertainties, and the rationale for decisions made by the meeting. Proceedings also document when data, analyses, or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

Avant-propos

Le présent compte rendu a pour but de documenter les principales activités et discussions qui ont eu lieu au cours de la réunion. Il contient des recommandations sur les recherches à effectuer, traite des incertitudes et expose les motifs ayant mené à la prise de décisions pendant la réunion. En outre, il fait état de données, d'analyses ou d'interprétations passées en revue et rejetées pour des raisons scientifiques, en donnant la raison du rejet. Bien que les interprétations et les opinions contenus dans le présent rapport puissent être inexacts ou propres à induire en erreur, ils sont quand même reproduits aussi fidèlement que possible afin de refléter les échanges tenus au cours de la réunion. Ainsi, aucune partie de ce rapport ne doit être considéré en tant que reflet des conclusions de la réunion, à moins d'indication précise en ce sens. De plus, un examen ultérieur de la question pourrait entraîner des changements aux conclusions, notamment si l'information supplémentaire pertinente, non disponible au moment de la réunion, est fournie par la suite. Finalement, dans les rares cas où des opinions divergentes sont exprimées officiellement, celles-ci sont également consignées dans les annexes du compte rendu.

Proceedings of the Maritime Provinces Regional Advisory Process on Scallop Fishing Area (SFA) 29 Assessment

12 April 2007
Bedford Institute of Oceanography
Dartmouth, Nova Scotia

Ross Claytor
Meeting Chair

Bedford Institute of Oceanography
1 Challenger Drive, P.O. Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

August 2007

Compte rendu du Processus consultatif régional des Maritimes sur l'évaluation des stocks de la zone de pêche du pétoncle (ZPP) 29

Le 12 avril 2007
Institut océanographique de Bedford
Dartmouth (Nouvelle-Écosse)

Ross Claytor
Président de réunion

Institut océanographique de Bedford
1, promenade Challenger, C.P. 1006
Dartmouth (Nouvelle-Écosse)
B2Y 4A2

août 2007

ISSN 1701-1272 (Printed / Imprimé)

Published and available free from:
Une publication gratuite de :

Fisheries and Oceans Canada / Pêches et Océans Canada
Canadian Science Advisory Secretariat / Secrétariat canadien de consultation scientifique
200, rue Kent Street
Ottawa, Ontario
K1A 0E6

http://www.dfo-mpo.gc.ca/csas/

CSAS@DFO-MPO.GC.CA

Printed on recycled paper.
Imprimé sur papier recyclé.

Correct citation for this publication:
On doit citer cette publication comme suit :

DFO, 2007. Proceedings of the Maritime Provinces Regional Advisory Process on Scallop Fishing Area (SFA) 29 Assessment; 12 April 2007. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2007/022.

TABLE OF CONTENTS

SUMMARY

A one-day meeting was held in the Maritimes Region on 12 April 2007. The purpose was to review the scientific advice on the status of Scallop Fishing Area (SFA) 29 west of longitude 65°30'W up to the end of 2006, and to evaluate the consequences of different harvest levels during the 2007 fishery on stock abundance and exploitation rate.

These proceedings document the presentations, record discussion and recommendations, and include written reports from the scientific referees, the Agenda, and the participants.

SOMMAIRE

Une réunion a eu lieu le 12 avril 2007 dans la Région des Maritimes. Elle avait pour but d'examiner les avis scientifiques sur l'état des stocks de la zone de pêche du pétoncle (ZPP) 29, à l'ouest de la longitude 65°30'O, jusqu'à la fin de 2006 et d'évaluer les conséquences de differents niveaux de capture sur l'abondance des stocks et le taux d'exploitation pendant la saison de pêche de 2007.

Ce compte rendu fait état des exposés, des discussions et des recommandations de la réunion et inclut les rapports écrits des arbitres scientifiques, l'ordre du jour et la liste des participants.

INTRODUCTION

A one-day meeting was held in the Maritimes Region on 12 April 2007. The purpose was to review the scientific advice on the status of Scallop Fishing Area (SFA) 29 west of longitude 65°30'W up to the end of 2006, and to evaluate the consequences of different harvest levels during the 2007 fishery on stock abundance and exploitation rate. It was pointed out that this is a scientific review meeting and not a forum to discuss management considerations.

The Chair, Ross Claytor, opened proceedings by welcoming the participants and in particular, thanking the external reviewers, Dr. Kurtis Trzcinski and Ms. Shelley Armsworthy. The Chair reviewed the proposed Agenda.

The context and overall process of the assessment review, as outlined in the Terms of Reference were then presented. The Agenda was reviewed and accepted. The Terms of Reference (Appendix 1), Agenda (Appendix 2), and participants list (Appendix 3) are attached below.

The Chair noted that the working paper (Smith et al., 2007/18) was available at the back of the room.

These proceedings provide brief summaries of presentations, rapporteur notes, and comments from participants and external referees. The work of the authors has been reproduced with little or no editing.

After thanking Paul Boudreau, the meeting rapporteur, the presentation of the working paper commenced.

SUMMARY OF PRESENTATIONS

Provide Total Allowable Catch (TAC) Advice for SFA 29 Scallop Fisheries by Subarea Using Analysis of Catch Rate and Survey Biomass Trends

Smith, S.J., S. Rowe, M.J. Lundy, J. Tremblay, and C. Frail. 2007. Scallop Fishing Area 29: Stock Status and Update for 2007. RAP Working Paper 2007/18.

Presentation Highlights

Steve Smith presented the overview of the fishery, catch rate indices, and research survey results.

In 2006, the SFA 29 scallop fishery was managed by varying opening and closing dates between June 19th and August 6th. Total landings were 417.4 t against a TAC of 400 t. The average meat weights in the catch for each subarea during 2006 were not appreciably different from those observed in 2005, with the percentages of small meats (less than 8 g) being extremely low. The fishery management set a 100 mm minimum shell height for retained scallops. Scallops with shell height of 90–100 m will be referred to as recruits for the following year.

Corrupted commercial log data was discovered in the database while preparing this assessment. As a result, the indices presented here will differ from those presented in previous documents. In particular, the estimates for 2002 will be higher than previously reported.

Average commercial catch rates over the whole area have declined since the opening of the fishery in 2001, with the rate of decline being higher for the Full Bay fleet compared to the East of Baccaro fleet.

For this assessment, catch rate estimates were calculated by major bottom types in each subarea. Catches generally reflect the proportion of preferred bottom trends in each of the subareas and this information was used to scale catch rates.

A study was carried out on the possible use of catch rate as an indicator of population abundance.

The results suggest that for the Full Bay fleet, the assumption of equal catch rate amongst subareas was rejected in Subarea B and marginal in Subarea C for the first two to three years of the fishery, but could not be rejected for the remaining years in the series. In 2001, the results imply that the larger portion of the total catch came from areas with lower catch rates for subareas B and C, while in following years the larger portions of the total catch came from the higher catch rate areas. Thereafter, catch rates by subarea appeared to be similar. For the most part, the patterns for catch rates by vessel were similar to those by subarea. The results for Subarea A were more variable given the smaller amount of effort and trips occurring there. In Subarea D, it appears that effort matched the density of scallops in 2004 and less so in 2006, while in 2005 the larger portions of the total catch tended to come from high catch rate areas. In 2006, more of the catch came from vessels with lower catch rates.

The East of Baccaro results suggest that effort matched the distribution of the resource starting in 2002 for subareas B and C, but in Subarea B in 2006 the larger portions of the catch tended to come from the lower catch rate areas. In Subarea D, effort did not match the density of the scallops until 2006. The results for Subarea A were too variable to interpret. For the most part, the results for vessels tended to follow those for subareas.

The declines in catch rates will in part reflect a decline in stock abundance but will be confounded by fishing behaviour. That is, while we know that there has been a decline in abundance, we cannot say for certain how much of a decline relative to other years. As of yet, it is not recommended that the fishery dependent information be used to assess the stock size and trends.

Since 2001, research surveys have been carried out using industry vessels. Sampling and measurements were conducted as per standard scallop research survey protocols (Smith and Lundy, 2002). Each year, two of the survey drags were lined with 38 mm polypropylene stretch mesh. Catches in the lined gear were used to estimate the abundance of scallops with shell height less than 80 mm, while the catches from the unlined gear were used to estimate the abundance scallops with shell heights greater than or equal to 80 mm. Catches of scallops with shell heights less than 40 mm are thought to give qualitative indications of abundance only, due to uncertainties about catchability of the small animals.

Comparative tow studies were completed between the two vessels in 2005. Sampling and measurements of the catch on one vessel was handled by Department of Fisheries and Oceans Canada (DFO) staff while a contract observer was responsible for the sampling on the other. There was a 5 mm offset between the two sets of results.

In 2001, the survey used a simple random sampling design over the whole area. From 2002 to 2004, subareas A to E were defined to be strata with random sampling within strata. In this

document, these estimates have been recalculated as post-stratifed estimates based on surficial strata within subareas. The 2005 estimates were calculated using domain estimators to overcome the problem of allocating survey tows to bottom type, and then grouping by subarea. In 2006, standard stratified random estimates were used for surficial strata within subareas. The impact of these changes is minimal. There is a major change in Subarea D where the estimate for 2003 has been adjusted down to account for non-proportional sampling between the bedrock and the thin sand bottom. In an earlier assessment, the decline from 2003 to 2004 was seen as higher than expected given the size of the fishery that year.

Data indicates high commercial size densities over most of the subareas in the first few years, as well as the recruitment of one or possibly two strong year-classes in parts of Subarea D, where there were no commercial size scallops in the initial years. Recruits were mainly in the west portion of SFA 29 in the earlier years, but thereafter the major area for recruitment was in subareas C and D. The temporal patterns for pre-recruits (80-89 mm) and younger (65–79 mm) mimic those for the recruits with the appropriate delay in time. At present, almost all recruits and pre-recruits are in subareas C and D.

The shell height frequencies provide two additional observations. First, clappers tend to mirror the distribution and abundance of the live commercial size animals, and secondly, it is difficult to follow cohorts in the survey data. Large increases in numbers of commercial size animals do not seem to be preceded by large numbers of recruits.

Scallops in the different subareas exhibit different growth curves, with those in Subarea A having the lowest maximum meat weight size and those in Subarea C having the highest. Differences are less consistent over time between growth curves for the scallops in the four major bottom types.

The number of scallops at shell height are converted to estimates of biomass of meat weights through subarea and location specific meat weight/shell height curves using linear mixed effects models. The biomasses for commercial and recruit size scallops have declined appreciably since 2005. The declines were similar for estimates calculated for the two East of Baccaro survey vessels.

The number and distribution of clappers was studied in SFA 29 D. The main results were that the proportion of clappers in the tows ranged from 0 to 0.41 with a mean of 0.15, and there did not seem to be an obvious spatial pattern. Shell height frequencies over all tows indicate that the mode for the clappers may be 5-10 mm below that for the live scallops. There was no evidence of significant morphologic changes, inflammation, or infectious agents that would indicate epidemic conditions.

There are three indicators of stock size for SFA 29 scallop: commercial catch rates for the Full Bay fleet and the East of Baccaro fleet, and the annual research survey. The two catch rate series provide similar trends for subareas A, B, and C, and indicate that population biomass is slowly declining in the last two years. The two series differ for Subarea 29 D, where the Full Bay fleet series is indicating a large decline from 2005 to 2006, while the East of Baccaro series shows little change.

The commercial catch rates are poorly correlated with the survey biomass estimates, albeit there are very few data points in this analysis. The survey biomass estimates for all of the subareas indicate more rapid declines from 2005 to 2006 than indicated by the commercial catch rates. However, the lack of strong population dynamics signals in the survey data makes it difficult to model the population precisely. Comparing predicted population biomass for 2006

from the last assessment with the current estimate for 2006 shows that all subareas declined, but these estimates have very large confidence intervals. Last year's model predicted that for the catch levels for the 2006 fishery, the probability of the population biomass declining for all subareas exceeded 50-60%. These estimates still stand despite the changes to survey series estimates. The expected decline was less than 10%, but estimated declines from the current model are more in the order of 13% for Subarea B, and 31% for subareas C and D. The current model predicts that catches of 25 t in subareas B, C, and D, all result in more than a 50% chance of the population declining. The expected decline is on the order of less than 10%.

Discussions

In regards to the poor correspondence between the fisheries dependent and independent catch rate information, it was pointed out that the survey is thought to be the better indicator of abundance. Nevertheless, there is a lack of evidence of population dynamics in the research survey results. This is reason to be cautious with these results as well.

The adjustment for surficial geology to reflect the habitat preferences of scallops was seen as a useful addition to the assessment. It helps to explain the catches in each subarea and allows for improved spatial expansion up to the appropriate geographic area.

There was some discussion on the value of the population size numbers for Subarea D. The 2005 survey estimates appeared to be high relative to the observations from the fishers. If this were true, then the drop in estimates from 2005 to 2006 would be overestimated by the survey results.

The only evidence for recruitment in the area under consideration is Subarea D. The lack of recruitment in the other subareas is a reason for concern and caution for future fisheries.

The results of the study on clappers show that indeed there is an increase in clappers in recent years, but there has also been a similar increase in live scallops. The modal size of the clappers was seen to be 5 mm smaller than the live scallops, suggesting that the mortality had happened some time in the past. It is important to note that clappers covered a wide range of size, similar to the live scallops. This may be reflecting deaths at many sizes and ages. There did not appear to be any great change in the numbers of predators. The video survey did not show a large number of starfish or crabs. It is unclear whether increased fishing pressure would effectively harvest marketable scallops before they died and were seen as clappers. Two cautions were raised on interpreting too much into the estimates of natural mortality from the information on clappers. The first is that clappers move with the tide and the currents and they may be aggregated in specific areas that are distant from the areas where the mortality occurred. Secondly, clappers tend to break up in the presence of the action of scallop dredges. Thus, the first tows are likely to see more clappers while later tows in an area would be expected to see more single shells. One would have to separate out this time effect before inferring too much from the data.

There is a high degree of natural mortality and recruitment variability. This suggests low future recruitment for future years that would support the fishery in the long term. There are questions about the lack of evidence for routine population dynamics in the size frequency time series. In some subareas, the fishery has been able to harvest where there was no evidence of recruitment. This may be due to the movement of the organisms at small size.

With the limited data set it is difficult to fully understand the decrease in biomass estimated from the surveys in 2005 and 2006. It may be due to a problem with the 2005 estimates being too

high as proposed by the Industry. This point, as well as the lack of observed recruitment, are the key points of discussion concerning the science advice.

In regards to advice from the available scientific information, it is important to note that there is no clear reference limit for this stock that would require a change in the TAC throughout the history of the fishery. With the cautions from the modelling results that highlight the difficulties of estimating biomass from catch rates, it was noted that the catch rates in this subarea are higher than observed in the Bay of Fundy.

It was suggested that the TAC for this year be selected between last year's TAC and the worst case scenario, as represented in this year's model output.

Provide an Assessment of the Potential for Lobster Bycatch in Each Subarea

Presentation Highlights

John Tremblay presented an overview of the lobster bycatch information.

Data sources for lobster bycatch come from both the scallop survey and the observers on the commercial boats. As in most years of the survey, the mean numbers of lobsters per tow was highest in 2006. In Subarea B, the catch rate increased to the highest level of the series with 3.6 lobsters per tow. In subareas A, D, and C, the catch rate decreased to less than 1.3 lobsters per tow. In Subarea C, there has been an increase in the proportion of sets with lobsters in the last 2 years. The size range of lobsters captured in the survey was 23-87 mm carapace length (CL), with most lobsters between 50-120 mm CL. In 2006, the size range was 23-157 mm CL, with a mode at 95-96 mm CL.

Most lobsters caught during observed fishing trips were in Subarea B. In subareas A, C, and D, most tows had zero lobsters. The size of lobsters captured as a bycatch ranged from 28 mm CL to 250 mm CL, but most lobsters were between 50 and 120 mm CL.

Regulations prohibit retention of lobsters. The total number of lobsters caught by each fleet was estimated with the assumption that the mean number of lobsters caught per tonne of scallop meats in the observed sets is representative of the fishery. The estimates for the fishery (both fleets) range from a low of 2,777 lobsters in 2001 (Full Bay fleet only) to a high of 7,339 lobsters in 2002. The estimate for the 2006 fishery was 7,107 lobsters (4,641 lobsters by the Full Bay fleet and 2,466 lobsters for East of Baccaro fleet).

The condition of the lobster bycatch observed in 2006 can be summarized as 73% uninjured, 19% injured, and 8% dead. The number of lobsters killed or injured by the fishery can be estimated by assuming that the proportion seen in the observed sets is representative of the fishery as a whole. The estimates for the fishery (both fleets) range from a low of 452 lobsters in 2004 to a high of 2,426 lobsters in 2002. The estimate for the 2006 fishery was 2,174 lobsters (1,663 lobsters by the Full Bay fleet and 512 lobsters for East of Baccaro fleet). To put these 2,174 lobsters in perspective, landings by the Lobster Fishing Area (LFA) 34 lobster fishery in the areas corresponding to SFA 29 were 3,468 mt in the 2005–06 season; equivalent to approximately 5,780,000 lobsters with a carapace length of 90 mm CL.

As far as the direct effects of the scallop fishery on the lobster stock, the only information available is the catch during the fishery and survey. There are no available data on bottom impacts. To evaluate all potential impacts would be challenging and expensive.

Indirect information on the effect of the scallop fishery comes from trends in the lobster landings by the directed lobster fishery in LFA 34. Lobster catches by the lobster fishery in the SFA 29 area are not indicative of an area that has been adversely affected by the scallop fishery since 2001. Like landings in LFA 34 as a whole, lobster landings in the SFA 29 area peaked in 2001–02, declined to 2004–05, and then increased in 2005-06. Relative to the 2000–01 season, landings in 2005–06 in the SFA 29 area showed a larger increase than LFA 34 as a whole. While the landings trends are consistent with the idea that the scallop fishery has not had a negative effect on the lobster fishery, landings trends by themselves cannot confirm no effect.

Direct injury and mortality of lobsters due to the scallop fishery is likely greater in localized areas of high lobster density. Effort should be taken to avoid areas and times when lobsters are in high concentrations or are soft-shelled. This has been attempted with the closure of parts of Subarea B. In 2005, the catch of lobsters per tonne of scallops was particularly high in the closed area; in other years, the catch of lobsters per tonne of scallops is actually higher outside the closed area. The difference between years may be related to annual differences in the timing of the effort and the movement of lobsters.

Discussions

It was pointed out that lobster bycatch is related to a number of biological and environmental conditions. Lobster bycatch will be higher in the SFA 29 scallop fishery when the lobsters are molting, as well as when the fishery is on bottom types preferred by lobsters. For example, the probability of bycatch of lobster showed the strongest relationship with bottom type, with the lowest probability associated with till/silt.

There was question about the estimate of the total number of lobster caught in the fishery. There may be a need for an increase in the number of observers to better quantify the bycatch rates.

There may be some benefit in better understanding the movements of lobster. For example, subareas C and E may be having lower bycatch rates because the organisms are moving through the area, whereas Subarea D may have a greater proportion of resident individuals.

While it was agreed that there is some bycatch of lobster in SFA 29 by the scallop fishery, the amount is very small, and changes in timing and location of the fishery could greatly minimize bycatch.

Estimate Bycatch of Non-scallop Species Other Than Lobster in the Fishery for as Many Years as Possible

Presentation Highlights

Steve Smith presented an overview of the non-lobster bycatch information.

Other Species

In addition to lobsters, all fish and invertebrate species are monitored by the observers. A preliminary analysis of the presence/absence of the different species in the observed catch was conducted for the data from 2001 to 2005. A multinomial logit model was used to relate the presence/absence of each species with bottom type, depth, associated catch of scallops, and the amount of catch of stones and garbage, etc.

Likelihood ratio tests indicated that all of the covariates (except scallop catch and stones in 2001) were significantly related to the presence of many of the species. In particular, the probability of bycatch of angler increased with depth while yellowtail and winter flounder decreased with depth.

Angler has the second highest probability of being present as bycatch. Yellowtail flounder was most likely to be caught in tows on till/silt, while winter flounder was least likely to be caught on this bottom type but more likely to be caught on thin sand. Winter skate was also less likely to be caught on till/silt sediments.

CONCLUDING REMARKS

The Chair reviewed the process to be followed for the remainder of the assessment review. The revised Science Advisory Report (SAR) would be submitted to the Editorial Board for final approval. Following translation, the SAR would be posted on the Canadian Science Advisory Secretariat (CSAS) website: http://www.dfo-mpo.gc.ca/csas/Csas/Home-Accueil_e.htm.

The Chair then thanked all the participants and closed the meeting.

REFERENCES

Smith, S.J., and M.J. Lundy. 2002. Scallop Production Area 4 in the Bay of Fundy: Stock Status and Forecast. DFO Can. Sci. Advis. Sec. Res. Doc. 2002/018.

Smith, S.J., S. Rowe, M.J. Lundy, J. Tremblay, and C. Frail. 2007. Scallop Fishing Area 29: Stock Status and Update for 2007. RAP Working Paper 2007/18.

APPENDICES

Appendix 1. Terms of Reference

Terms of Reference

Meeting of the Maritimes Regional Advisory Process on SFA 29 Scallop Stock

12 April 2007

Needler Boardroom
Bedford Institute of Oceanography
1 Challenger Drive, Dartmouth, Nova Scotia

Assess the status of SFA 29 scallop and provide TAC advice. The assessment should include:

- Provide TAC advice for SFA 29 scallop fisheries by subarea using analysis of catch rate and survey biomass trends.
- Provide an assessment of the potential for lobster bycatch in each subarea.
- Estimate bycatch of non-scallop species other than lobster in the fishery for as many years as possible.

Outputs

CSAS Science Advisory Report
CSAS Research document
CSAS Proceedings

Participants

- DFO Science
- Fisheries & Aquaculture Management
- NS provincial representatives
- Fishing industry

Appendix 2. Agenda

PROPOSED TIMETABLE

Stock Assessment Update of SFA 29
West of 65°30'W

12 April 2007

Needler Boardroom
Bedford Institute of Oceanography
1 Challenger Drive
Dartmouth, Nova Scotia

Thursday, 12 April

09:00: Introduction

09:10-10:00: SFA 29

10:00-10:30: Break

10:30-12:00: Review

12:00-13:30: Lunch

13:30-16:00: SAR

Appendix 3. List of Participants

List of Participants

Meeting of the Maritimes Regional Advisory Process on SFA 29 Scallop Stock

12 April 2007

Needler Boardroom
Bedford Institute of Oceanography
1 Challenger Drive, Dartmouth, Nova Scotia

Name	Affiliation	Telephone	Fax	E-mail
Amero, Keith	Full Bay Scallop Association (FBSA)	(902) 245-1844	(902) 245-1844	akamero@eastlink.ca
Armsworthy, Shelley	DFO Maritimes, PED	(902) 426-4231	(902) 426-2256	ArmsworthyS@mar.dfo-mpo.gc.ca
Baker, Blair	Eastern Shore Fisherman's Protective Assn.	(902) 845-2408	(902) 845-2629	nellie@esfpa.ca
Baker, Terry	Eastern Shore Fisherman's Protective Assn.	(902) 845-2408	(902) 845-2629	nellie@esfpa.ca
Boudreau, Paul	DFO Maritimes, RAP Office	(902) 426-6083	(902) 426-5435	boudreaupr@mar.dfo-mpo.gc.ca
Butler, Maureen	DFO Maritimes, FAM	(902) 426-9856	(902) 426-9683	butlerm@mar.dfo-mpo.gc.ca
Claytor, Ross (Chair)	DFO Maritimes, PED	(902) 426-4721	(902) 426-1506	claytorr@mar.dfo-mpo.gc.ca
Cronk, Ron	NB Department of Fisheries	(506) 662-7026	(506) 662-7030	Ron.Cronk@gnb.ca
Frail, Cheryl	DFO Maritimes, PED	(902) 426-5448	(902) 426-1862	FrailC@mar.dfo-mpo.gc.ca
Fuller, Susanna	Dalhousie University	(902) 442-0199	(902) 405-3716	susannadfuller@gmail.com
Hazelton, Reg	Full Bay Scallop Association (FBSA)	(902) 245-2917	(902) 245-2627	dhazelton@ns.sympatico.ca
Hazelton, Vance	Full Bay Scallop Association (FBSA)	(902) 245-5712	(902) 245-2721	vah@ns.sympatico.ca
Jellett, Joanne	APCFNC Secretariat	(902) 275-5760	(902) 275-5760	jjellett@ns.sympatico.ca
Lundy, Mark	DFO Maritimes, PED	(902) 426-3733	(902) 426-1862	lundym@mar.dfo-mpo.gc.ca
O'Neil, Shane	DFO Maritimes, PED	(902) 426-1579	(902) 426-6814	oneils@mar.dfo-mpo.gc.ca
Rowe, Sherrylynn	DFO Maritimes, PED	(902) 426-8039	(902) 426-1506	rowes@mar.dfo-mpo.gc.ca
Smith, Stephen	DFO Maritimes, PED	(902) 426-3317	(902) 426-1862	smithsj@mar.dfo-mpo.gc.ca
Spinney, Ashton	LFA 34, Adv. Mgmt Board	(902) 643-2490	(902) 643-2490	ashton@ns.sympatico.ca
Stewart, Dick	Full Bay Scallop Association (FBSA)	(902) 742-9101	(902) 742-1287	Aherring@ns.aliantzinc.ca
Sweeney, Anne	DFO Maritimes, FAM	(902) 742-0859	(902) 742-6893	sweeneya@mar.dfo-mpo.gc.ca
Tremblay, John M.	DFO Maritimes, PED	(902) 426-3986	(902) 426-1862	TremblayJ@mar.dfo-mpo.gc.ca
Trzcinski, Kurtis	DFO Maritimes, PED	(902) 426-3190	(902) 426-1862	TrzcinskiK@mar.dfo-mpo.gc.ca
Wadman, Glenn	Full Bay Scallop Association (FBSA)	(902) 839-2023	(902) 839-2070	glennw@dbkenneyfisheries.com
Wentzell, Ian	APCFNC Secretariat	(902) 435-8021	(902) 435-8027	Ian.Wentzell@apcfnc.ca